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## PATENT CLAIMS

1. A process for the production of spray-dried powder material, characterized in that
- 10 a) in a first step, a liquid medium, spray gas, pulverulent material and hot air are combined,
- b) the pulverulent product formed falls into a fluidized bed, is taken up, fluidized and transported further,
- 15 c) in one or more granulation step(s) is sprayed with further liquid medium, dried and conveyed in the fluidized bed toward the powder metering device, from which
- 20 d) some of the pulverulent material is returned into the process.
2. The process as claimed in claim 1, characterized in that the liquid medium is a solution, a dispersion or a suspension.
- 25 3. The process as claimed in claim 1, characterized in that the returned pulverulent material is comminuted before return.
- 30 4. Process as claimed in claim 1, characterized in that air or an inert gas selected from the group consisting of  $N_2$ ,  $CO_2$  or ..... is used both as spray gas and as carrier gas and heating gas.
- 35 5. The process as claimed in claims 1 and 4, characterized in that the gas is circulated.
- 40 6. The process as claimed in claims 1, 4 and 5, characterized in that the circulated gas is freed from particles by filters and re-fed to the spray nozzles or heated and introduced into the fluidized bed.

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7. The process as claimed in claims 1 and 4 to 6, characterized in that the gas is freed from particles with the aid of dynamic filters.
- 10 8. The process as claimed in claims 1 and 2, characterized in that the liquid media used have different compositions at different points of the plant.
- 15 9. The process as claimed in claims 1 to 8, characterized in that that particle sizes of from 50 to 1000  $\mu\text{m}$  can be established specifically by varying the parameters spray pressure, amount of liquid, amount of powder returned, hot-air stream and temperature of the hot air.
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- ~~10.~~ A spray-drying plant, characterized by
- a) a spray-drying unit (B)
- b) a fluidized bed (A)
- 25 c) one or more additional spray or atomization nozzles for liquid media (C)
- e) a powder metering device (D) and
- f) a powder return (9) with fan (E).
- 30 11. The spray-drying plant as claimed in claim 10, characterized in that liquid medium (5), spray air (6), pulverulent material (9) and hot air (4) are combined in the spray-drying unit (B).
- 35 12. The spray-drying plant as claimed in claim 10, characterized in that a spray-drying unit (B) is located vertically above a downstream fluidized bed in a spray tower.
- 40 13. The spray-drying plant as claimed in claim 10, characterized in that the spray-drying unit (B) comprises a spray system which consists of a two-component spray nozzle heated by hot water with

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5 coaxially arranged powder return and hot-gas surrounding flow.

10 14. The spray-drying plant as claimed in claim 10, characterized in that one or more additional spray or atomization nozzles for liquid media (C) can be installed in the fluidized bed at variable locations.

15 15. The spray-drying plant as claimed in claim 10, characterized in that the fluidized bed is followed by a powder metering device (D), which is separated off by a paddle valve (F) and is fed by an overflow (8).

20 16. The spray-drying plant as claimed in claim 10, characterized in that some of the product formed is returned, if desired after comminution, into the spray-drying unit (B) via a fly conveyor, in which a fan (E) serves as conveying element.

25 17. The spray-drying plant as claimed in claim 16, characterized in that the fan (E) simultaneously serves as comminution unit for the returned powder.

30 18. A spray system consisting of a two-component spray nozzle heated by hot water with coaxially arranged powder return and hot-gas surrounding flow.